We claim:

1. A method for making a tissue engineering scaffold for inducing formation of extracellular matrix by cells bound to the scaffold comprising coupling matrix-enhancing molecules to the scaffold in an effective density to elicit production of extracellular matrix without increasing cellular proliferation, wherein when the matrix-enhancing molecules are TGF-β, the TGF-β is coupled to the matrix by a polymer tether having a molecular weight between 2000 and 6000 and is in a density between 1 and 100 ng TGF-β/ml or in a concentration of between about $4 \times 10^{-6}$ and $4 \times 10^{-3}$ nmol/ml.

2. The method of claim 1 further comprising attaching cells to the scaffold.

3. The method of claim 1 wherein the matrix-enhancing molecules are angiotensin II.

4. The method of claim 1 wherein the matrix-enhancing molecules are insulin-like growth factor.

5. The method of claim 1 wherein the matrix-enhancing molecules are ascorbic acid.

6. The method of claim 1 wherein the matrix-enhancing molecules are covalently coupled to tethers which are covalently coupled to the scaffold.

7. The method of claim 1 wherein the scaffold is a hydrogel.

8. The method of claim 7 wherein the hydrogel is formed of a polymer selected from the group consisting of alginate, collagen, hyaluronic acid, and polyethylene glycol polymers.

9. The method of claim 7 wherein the matrix-enhancing molecules are TGF-β coupled to the hydrogel in a concentration of between about $4 \times 10^{-6}$ and $4 \times 10^{-3}$ nmol/ml.

10. A tissue engineering scaffold for inducing formation of extracellular matrix by cells bound to the scaffold comprising coupled to the scaffold matrix-enhancing molecules in an effective density to elicit production of extracellular matrix without increasing cellular proliferation, wherein when the matrix-enhancing molecule is TGF-β, the TGF-β is coupled to the matrix by a polymer tether having a molecular weight between 2000 and 6000 and is in a density

between 1 and 100 ng TGF-β/ml or in a concentration of between about $4 \times 10^{-6}$ and $4 \times 10^{-3}$ nmol/ml.

11. The scaffold of claim 10 having cells attached thereto.

12. The scaffold of claim 11 wherein the cells are selected from the group consisting of smooth muscle cells, endothelial cells, fibroblasts, and chondrocytes.

13. The scaffold of claim 10 wherein the matrix-enhancing molecule is TGF-β coupled to the scaffold in a concentration of between about $4 \times 10^{-6}$ and $4 \times 10^{-3}$ nmol/ml.

14. The scaffold of claim 10 wherein the matrix-enhancing molecule is coupled to a tether covalently bound to the matrix, wherein the tether has a molecular weight of between about 200 and 10,000.

15. The scaffold of claim 14 wherein the tether has a molecular weight of between about 2000 and 6,000.

16. A method for repair or replacement of tissue comprising applying or implanting at a site in need of repair a tissue engineering scaffold comprising coupled to the scaffold matrix-enhancing molecules in an effective density to elicit production of extracellular matrix without increasing cellular proliferation, wherein when the matrix-enhancing molecule is TGF-β, the TGF-β is coupled to the matrix by a polymer tether having a molecular weight between 2000 and 6000 and is in a density between 1 and 100 ng TGF-β/ml or in a concentration of between about $4 \times 10^{-6}$ and $4 \times 10^{-3}$ nmol/ml.

17. The method of claim 16 wherein the matrix-enhancing molecule is TGF-β.

18. The method of claim 16 wherein the matrix-enhancing molecule is angiotensin II.

19. The method of claim 16 wherein the matrix-enhancing molecule is an insulin-like growth factor.

20. The method of claim 16 wherein the matrix-enhancing molecule is ascorbic acid.

21. The method of claim 16 wherein the matrix-enhancing molecule is covalently coupled to a tether which is covalently coupled to the scaffold.

22. The method of claim 16 wherein the scaffold is a hydrogel.

23. The method of claim 22 wherein the hydrogel is formed of a polymer selected from the group consisting of alginate, collagen, hyaluronic acid, and polyethylene glycol polymers.